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THE CHIROGRAPHY OF THE ḪAMMURABI CODE.

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An inspection of the photographs published by Scheil will satisfy anyone that the chirography as a whole is characterized by remarkable uniformity, and real elegance. A minute study will impress one with a few peculiarities which suggest that several different scribes have worked upon the stone. These peculiarities are of four kinds: (1) the existence of "joints" in the ruling of the stone; (2) the actual difference in form of certain characters; (3) the difference in heaviness of the writing in certain sections; and (4) the tendency of certain sections to slant to right or left. Of these four marks, the autographed text exhibits only the second. It will be generally recognized as impracticable to represent accurately, by mere autography, a minute difference in shading that extends through several columns, or a tendency of certain scribes to incline very slightly to right or left. The "joints," in the nature of the case, are discernible only upon scanning the block, or a photograph of it, as a whole.

An inspection of Scheil's plates will show that the aim of the scribes was to continue each horizontal ruling clear across the face of the stone, unless interrupted by a line occupying double-space, or by some defect in the stone. But as the double-spaces are quite numerous, occupying nearly one-fifth of the entire inscribed space, it was impracticable to cut all the horizontals ere beginning the inscription itself. Each scribe would, for the most part, cut the ruling as he needed it for the completion of his own work, since carrying it on into the next column was to risk an error. But when two scribes were working simultaneously upon a face of the stone, their horizontal rulings could not be expected to meet absolutely, even though all rulings should be in the beginning marked in color upon the face of the stone. Furthermore, the tendency to carry a horizontal line into the next column is apparent at such joints. In some places the ruling projects so far into the next column as to mar the writing in that column. Now it seems a safe conclusion that such a line must have been cut before the cutting of the signs which it mars. It is hardly to be supposed that the scribe would deliberately begin in a space already inscribed, defacing the finished work for an inch or two, by a line intended for the column beyond it. It is understood that these extensions are into a double-space in the next column, where no ruling is needed.

Now these extensions, not numerous, and usually small, may be very significant. At certain joints the extensions are from a certain column into the next one on the right: at others, they extend into the column on the left. At one or two places the extensions lap. A most notable case of the last sort is to be observed upon the reverse, in the joint at cols. **36**, **37**; and the ruling under **38**, 26 projects to the left, marring all of **37**, 26, and continuing slightly into col. **36**. From what has been said, it is clear that the right-hand column in such a case must have been cut first. That is, at such a place the ruling indicates that the scribe must have been working backward through the text from right to left so far as the columns were concerned, though he could cut each individual line from left to right. It is apparent at once that there is no difficulty whatever about cutting column **38** or **37** before **36**, if the scribe were merely copying another stone, column for column and line for line. In such a case the column-spaces could be measured off, colored rulings made upon the stone, and three or four scribes could work simultaneously upon a single face. The conclusion from the evidence of the ruling is, then, that the stone found at Susa is but a copy made from some other stone. The organization of the judiciary, of which we learn something in the official correspondence published by L. W. King, must have required a copy of the law in every court, and the exigencies of such organization must also have necessitated the multiplication of copies of the standard law of the realm with much greater rapidity than was possible to a single scribe working upon the stubborn diorite. We shall presently observe other possible evidences of such a method as we have considered..

It may seem that overmuch is made of these peculiarities in the ruling of the stone. It will be seen, however, that these "joints" in the work coincide with the evidence afforded by a change in the form of certain signs and minute differences in shading and slant. When we note the concurrence of these peculiarities, we have fair grounds for concluding that several scribes worked upon the stone, though only the evidence of the ruling would indicate simultaneous work. The details of these joints will be briefly noticed when we consider the differences in forms of signs.

Further, these phenomena are entirely distinct from another sort which may readily be noticed. It would appear that Scheil's plates are made from photographs of a paper squeeze, and that this squeeze was made in small sections, which were afterwards joined together. The reader who has access to the photographs can readily locate what I take to be the points of juncture.

So far, we have observed how the double space required by a long word or phrase prevents absolute uniformity in the ruling. Upon the obverse of the stone no other factor interferes. Not so upon the reverse. The photographs here show a number of curious wedged-shaped spaces, with new rulings beginning at different places, and continuing across the stone. An examination of the photographs suggests that the reverse of the stone is not a single plane surface. About fifteen inches from the top of the inscription, if we may approximate from the data published by Scheil, the stone slopes backward sharply at the upper left corner. The reader can grasp the idea at once by breaking a common card backward at the upper left corner. An effort to rule the stone horizontally then produces wedge-shaped spaces at the junction of the upper facet with the main face of the stone. At the bottom of the reverse is apparently another such backward slant of the stone. The length of the inscribed portion of it increases gradually from left to right. Apart from this failure to cut the face of the stone down to a perfect plane ere inscribing the code upon it, we may notice, as compared with the obverse, a rather larger proportion of small holes in the stone, that interfere occasionally with the symmetry of the text, and are actually responsible for one or two small errors.

Another peculiar feature of the inscription upon the reverse is the very crowded condition of the text upon the lower facet. This facet begins about seventy lines from the top. The average number of characters in a single-space line (averaging the whole inscription) is about four and one-half. But in this densely packed section we find occasionally even nine or ten characters in a single-space line. The reader may perceive this at a glance, if he will refer to the autographed text, comparing, for instance, the ends of **38**, **39**, or **40** with the earlier portions of the same columns. Further, the spaces in which these crowded lines are written are often narrower. This crowding cannot find a satisfactory explanation in the popular notion that everyone has a tendency to write more compactly at the bottom of a page, for the tendency is conspicuously absent upon the obverse. And in this crowded portion of the reverse the chirography seems to differ from that in the upper part of the same columns. It is further to be remarked that three-fourths of all the errors or defects in writing occur in these crowded lines. Two-thirds of all the defects may be found in the ends of columns **33**–**39**. The reader may be able to pick out in this crowded section lines that would have been divided into two lines in the upper part of the same column. A considerable number of them would have been allowed at least a double-space. (*Cf.* **34**, 93, 94, with **33**, 64, 65, or **36**, 60, 61.) We must notice also that there is constant predetermination everywhere of the space to be allotted to each sign. That is, if there are to be six characters in a line, we do not find that four of them are allowed ample space, while the last two are greatly cramped or condensed. On the contrary, the space is equably distributed. This fact is especially significant when eight or nine characters must be cut in the space usually allotted to four or five. Grouping these features with what has already been suggested as to copying the Code from another stone, we may surmise that when the columns had been inscribed down to the beginning of the lower slant, this last surface proved too short for the remaining portion, so that lines were made narrower, many double-spaced lines were condensed into single spaces, or occasionally two lines made into one. One case will be quoted later; the reader may observe several probable instances. And as the chirography of these lower ends has points of difference from that above, it is possible that two sets of scribes could have worked simultaneously, one upon a platform over the other.

How this crowding may operate to multiply errors may be illustrated in col. **34**. In the eighty-seventh line, allowed but a single space, we have eight characters: i-pu-uš-ma uš-ta-mi-it. In the autographed text I have not exactly represented this line. The scribe left a distinct space between the last two signs, which I did not do. His result was that the head of the small oblique wedge of the it practically touches the inner vertical at its left. There is thus no room left to cut the small še that distinguishes id from da. The scribe depended upon the intelligence of the reader to read the sign as it should be. In my autographing I took the small space between the last two characters, assigning it to the last one, thus gaining room to write a very small še in the da. The same thing occurs in **38**, 78, in the double-line, (*a*) u lu UR.MAḪ id-du-uk (*b*) rê'um ma-ḫar ilim. This double-line is crowded into a space narrower than that allotted to some single ones. Part (*a*) has seven characters so that id is treated as above. It is actually da. The ilim in (*b*) projects upward into the space that should be occupied by the tiny ud of the uk above; while the cramped ḫar is allowed to pass as a seeming ḫi. In spite of these things no one would fail to understand the line. The sign uk is treated the same way, for illustration, in **36**, 77, where the tim below reaches into the space needed to complete the uk. I may remark that the frequency of the omission of the small signs distinguishing az and uk suggests that they may not have been originally part of the signs, but were later additions to differentiate signs that had become similar. (The shifting forms of ṭu (šiḳlu), id, da, and mir, suggest that they may have had a similar history. The ṭu in **35**, 61 seems to have a *gunu* attached to the top. Note the variations of mir in the sign-list.) In **33**, 76, 89, 93, we find the scribe, when desiring to distinguish id from da, in a crowded line, contenting himself by drawing three or four vertical scratches in place of the carefully cut še, that would have required more room. The same thing was done in **15**, 55. In **36**, 87 the signs id and da appear in the photograph to have been exchanged. The line ID.GUD.DA.UR.RA actually is, in the plate, DA.GUD.ID. UR.RA. Whether any attempt was made to erase the small še in the third character is doubtful. There are other cases of da for id by this scribe; but these suffice for illustration.

Very closely connected, perhaps, with this uncertainty in the case of id and da, is the shifting of forms of ṭu (šiḳlu) and mir. The latter occurs but a few times in the inscription, and presents a new form in nearly every case. A glance at the six forms in the sign-list will show the reader that the "main frame" of the mir is identical with that of the ṭu. The variant forms are produced by a shifting of the *gunu*. And it is a matter of peculiar interest that three of these six forms have two *gunus* each. A reason for this may be seen by inspecting the ṭu in **35**, 61, where an unmistakable *gunu* is attached to the upper bar. But this leaves the ṭu identical in form with two types of the mir. Such a form of ṭu must have been well known, to produce so much shifting of the mir, with a double *gunu*. When we consider also the later Assyrian shekel sign, we observe that it has more strokes than belong to the simple ṭu of this inscription; and as the Assyrian often diminishes the number of strokes in the older characters, we are given some grounds for suspecting that this *gunu* form of the simple ṭu is the one from which the Assyrian ṭu is derived. This impression becomes the stronger, when we observe that in the Assyrian the ṭu and the mir differ only in the fact that the latter has a *gunu* at the left; just the difference between the agû of **43**, 45, and the šiḳlu of **35**, 61. Perhaps ṭu, id, and da are derived originally from the same character, with the special significance of "measure," and with subsequent modifications to distinguish different kinds of measures. For ṭu stands as a measure of weight, or monetary values; in combination with two other signs, it becomes a reed, one of the Babylonian measures of length. Id, which = da + še, appears as a measure of value, or hire, probably a mere measure of grain at first, as wages are often estimated in grain, We observe again that both mir and da stand for the ideas of "mighty," "powerful;" while id and da may signify also "the hand." We have here then the basis of the group, the hand being both a symbol of power and a unit of measure of length. Again, the mir is given almost exactly the form of da, Neb. II, **1**, 37. Now referring to the "Stele des Vautours," A, **2**, 5, etc., the crude da there is at once recognizable as the rough outline of a forearm and outspread hand, while šu "hand," is without the forearm. The use of id, then, to express "hire" or wages, would be derived from the idea of the hand grasping or receiving grain. The double *gunu* of the mir in our text then emphasizes its idea of power or majesty. There would appear then to be a real basis in the original ideas for the confusion of these signs. We may remark that in the

Egyptian we have some weights and measures of the same name and quantity as the Babylonian ones, while the forearm and hand is the regular symbol of might or power, continually recurring in the rehearsal of royal attributes. But we may not here follow up this line of comparison.

Further, in examining the different forms of these signs, we observe how very easy it was for the scribe to write id for gab in **34**, 79. Both id and da occur repeatedly in other texts with the small oblique wedge at the right terminating the upper horizontal bar instead of the lower one. But this would leave the outline practically identical with the gab as regularly written in this text.

Possibly there is an effort to differentiate different forms from the same sign in the case of gul. This sign occurs but four times in the text: as gul in **42**, 5, 22: as kul, with a different form, in **43**, 19, and under a still more different form in **39**, 29, in the awîlum KUL. This last form is practically identical with Gudea, B, **7**, 57. And the shifting of the *gunu* which we have just been noticing suggests that we should not overlook the rare *gunu* of UD, in **36**, 89, while in **43**, 24, the *gunu* is not discernible, so that the sign appears as DU instead of išdu, which other texts would lead us to expect.

Recurring to the way in which overcrowding or a defect in the stone may lead to an apparent error in the text, an excellent illustration may be obtained by comparing **33**, 47, 55, 61, **34**, 82, 92, and **37**, 24. Here we have in each case the loss of an eye discussed. In four of the places, the characters uḫ-tab-bi-it form a line to themselves. In **37**, 24, "his eye" is crowded into the same single-space line; the ideogram is used, and bi dropped out—an abbreviation in spelling not uncommon in the text. The line then reads: ŠI-šu uḫ-tab-it. Scheil reads the last sign da. But despite a heavy scratch partially defacing the line, I think the small še of the id is clearly discernible. It is different in **34**, 92. Here the ideogram was not used. We have the spelling i-in-šu instead. Observe that in, as also uḫ, requires as much space as two average signs, so that the characters i-in-šu uḫ-tab-it would require the space of eight common signs. We observe further that a hole in the line, between in and šu, occupies space enough for one sign. The scribe thus cramped left the final character like the defective id cited above, there being not room enough left within it for the ordinary še. We may then be justified in thinking that the intended reading is uḫ-tab-it, not uḫ-tab-da, as Scheil reads. A further indication for this is the comparative indifference of this particular scribe to some small inner wedges. The small inner vertical of in is omitted in this very line; also in lines 81 and 63 above, perhaps in 73, and in ni in lines 57, 61. In the autographing these wedges were restored, but I do not think the scribe here ever cut them.

Besides peculiarities of this sort, we may observe a number of recognized errors, which the scribes have corrected. In **1**, 59 the writer of Dur-ilu perhaps first wrote gar, then partially erasing, made dur out of the gar. In **39**, 70 ir was written instead of kak, and a feeble attempt at erasure of the small verticals was made. In **33**, 54, 56, ni was written instead of kak, and the incomplete erasure leaves the extra wedge still visible. In **35**, 70, lu was written in place of ku, the extra wedge is partially erased. In **36**, 63 the scribe wrote "boat" when "boatman" was required; the GIŠ.MÁ is corrected to MÁ.DU.DU. In **38**, 30 the ideogram for "horn" was given two inner verticals instead of one; one is partially erased. In the same line the bi was first omitted: the ir being made long enough to occupy the remaining space. The error was discovered and the bi written over the end of the ir, a new short ir following over the other end of the original ir. Notice that it was only six lines above that bi was omitted from uḫ-tab-bi-it. Two lines below, in **37**, 32, 33, we have the syllable sa so closely connected with a tapering vertical blot at the end, that it suggests the possibility of these characters having been carelessly written bit at first, and afterwards corrected by marring the final vertical wedge. About this case the photograph does not permit one to be dogmatic. In **39**, 15 is a very nice case of correction, the scribe first writing ḫa-am-ši-im, then correcting the "fifth" to "sixth" by defacing ḫa-am, and writing ši over the am. In **42**, 36 ir-ri-šum was first written; then the final character amended to tim. In **37**, 16 e-mi-e was similarly corrected to e-mi-šu. The most significant case of all is in **42**, 19. Here the scribe seems to have omitted the line entirely, and written the next one in its place. The error was discovered ere proceeding further, and the line corrected to a̱-wa-ti-i a, instead of ša i-na na-ru-i-a. The final characters required no change: the blurred ru is still discernible: the second na needed little change to make a ti; the first is not totally obliterated, though not legible; the end-wedge of ša is almost untouched, while traces of its initial-wedges can be discerned. It is clear that an error of this sort is most probable when the scribe is copying another inscription, line for line. At the end of **43** we find li-te-ir; it is repeated in the first line of **44**; the only case in the inscription. The scribe has not thought it worth while to erase either of them. Effort was made in autographing the text to illustrate each of these erasures, so far as traces were visible, except in the case of Dur-ilu.

Another type of error occurs in the ruling. Line **20**, 71 should have had a double-space. Running the ruled line through divides a word, thus:

u lu i-na na-ba-
al-ka-at-tim.

In **39**, 62 is a similar case. Probably we have here, in this dense packing, an effort to crowd three lines into two, after the rulings were drawn. The present division is,

bi-en-ni e-li-šu
im-ta-ku-ut, a-na na-di-na-
ni-šu u-ta-ar-ma.

The original must have been,

bi-en-ni e-li-šu
im-ta-ku-ut,
a-na na-di-na-ni-šu
u-ta-ar-ma.

In contrast with this superfluous ruling may be noticed the omission of ruling between **25**, 66, 67, so that a new section of law begins in (*b*) of a double space, as though it were but part of the preceding phrase or word. The same thing appears to me to have occurred in **34**, 94–95 (the column-end already noted as full of small errors), though in autographing the text it was treated as though the ruling were perfect.

In the sign-list, effort has been made to suggest some of the chirographical peculiarities, not necessarily listing every minute variation in form. It is apparent at once that the majority of the 235 signs in the code show no essential variations. About fifty show some slight changes. Many of these turn merely upon the length of some small wedge, or its absence. Thus, in the small group that forms the left of al, šum, il, ur, ad, ṣi, or tum, one scribe may habitually omit the tiny vertical; another may use it, always ending in the lower parallel; a third may regularly carry it through the parallel. It would be tedious to enumerate the tastes of each scribe in regard to each sign. The first style in the sign-list is generally the prevailing one. Ra, tim, and ak have the largest number of variations. Not all of tim and ak are illustrated in the sign-list. The main elements are shown.

Scribal tastes are most pronounced in the case of mu, ik ak, ri, ar, tim, šum, uš, ra, ma, mir, im, u, lum, ma il. The following suggestions as to different scribes may serve as a basis for more minute study of the chirography. The figure after a syllable indicates the number of its style in the sign-list:

Scribe A: obverse, **1**–**11**. Uses in for ina, **1**, 15, 18, **4**, 13, 16, 39; u (and) for syllabic u, **1**, 15, **2**, 15; šig for ši, **1**, 12, **4**, 45; šag for sa, **2**, 50. Characters heavy, vertical, occasional minute inclination to left. Heads of horizontal wedges, especially if in groups of four (as in ga), apt to be crescent-shaped. Prefers mu^{1}, ak^{1}, ra^{1}, bu^{2}, tim^{5}, il^{1,5}, šum^{1}, ad^{1}, ṣi^{2}, ru^{1}, eš^{2}, ri^{1}, ar^{1}, uš^{2}, ma^{1}, im^{2}, u^{1}, ik^{1}, ak^{1}, lum^{1,2}. Absence of peculiar syllables in code suggests a new scribe may have begun there; but there is scarcely any change in forms.

B. **11**–**16**. About the middle of **11**, the ruling is broken, and is not continuous with that in **10**; some ends project into **12**; two or three toward bottom of **12** project into it. Characters heavy and stout as in A; vertical, or minutely slanted to right; preferences in style indicate a frequent effort to save strokes. Uses syllable dar. Preferences: eḳlu^{2}, u^{2}, ma^{2}, ik^{2}, mu^{2}, ak^{3}, lu^{2}, uš^{3,4}, tim^{4}, ri^{3,4}. Ruling is jointed at **14**–**15**; but not enough change in style to indicate a new scribe. Lu^{3} and šar^{2}, are only distinctions. The scribe probably laid off his work in two sections.

C. Reverse: **17**–**18**? Wedges more slender, appearing taller; heads larger, with marked tendency to crescent shape; šum, ad, im, il, etc., often without the small vertical at the left: bars of mu short and heavy, end bar of ik very short.

Slant to right quite common. Line **17**, 18, seems to use junction of facets as a ruling. Preferences, except for above differences, much like A's. Perhaps only a section of the next.

D. Joint between **18–19**: ruling under **19**, 20, 22, 33, 37, 42, 47, projects considerably into **18**, at the left. None from **18** to the right. Lines **20**, 15, **21**, 19, seem to use junction of facets as ruling. Wedges generally heavy, resembling A, except that heads average larger, with more tendency to crescent form. A small section of about twenty lines' length, beginning about the 11th, in two or three columns, suggests C. C probably inscribes the lower slant of the reverse for several columns.

E: **25–29**. Probably begins about middle of 25. The tendency to large crescent-shaped heads disappears. Heads often very small. Characters are more slender than in C, whom they recall at first glance. All signs with more than one main vertical, such as ri, hu, uz, ar, tend to have these of equal height; end bar of ik also taller; likewise bars of mu. Sides of wedges appear curved in many places. Small vertical wedges in the left of im, ad, šum, il, etc., not regularly inserted. Uses šim; elsewhere ši-im is the custom.

F: **29–34**. In **30**, 10, 11, 17, 46, rulings of **29** project; rulings of 9, 53, 56, 65, project into **29**. Style rather recalls B. Small verticals in uš go through the horizontal; similar tendency in other signs; upper small wedge of ru either absent or a variable scratch; uses tur instead of tu-ur. Nu slanted sharply to right in a number of places. Perpendicularity not well preserved; often slants to right or left. Preferences recall B. Notice ru^{2,5}, ma^{2}. mâru^{1}, ku^{5}, lu^{3}. Small errors begin to be very numerous in the crowded bottoms of these columns. Probably begins about middle of **29**.

G: **35–37**? Upper and lower wedges in all parallel fours (*e. g.*, ga, lum, mi, etc.) decidedly heavier than central ones; heads of them prominent. Lum and mi, like A or D, emphasize the distinct character of the sets of wedges composing them. Middle four in lum tend to slant; left four nearer vertical than before. *Cf.* **35**, 45, or **36**, 27, with **32**, 65, 75. Ak^{1}, ik^{1}, ma^{1}, ku^{5}; and shorter bars in gi, zi, ri, ar, etc., make a further distinction from preceding. Section of slender work at top suggests E.

H : **37**–**40**. The most marked prolongation of misruling occurs here, as already mentioned, from **38**, 26, marring all of **37**, 26, and reaching into **36**. Lapping projections: four or five from **37** to left, two or three from **36** to the right. Peculiar writing of lum, mi, etc.. like the last, but more pronounced; uses syllabic value kaz, for sign bi, with peculiar form, **38**, 83; two right-hand wedges of i in line with upper and lower left; new type of sum, ik; u and ak like B; small verticals in ad, uš, tum, šum, etc., quite prominent, and go through horizontal to lower line; characters heavier than for some columns preceding; secondary verticals in ḫu, ri, ar, shorter again. Šum^{3,4}, ik^{3}, ak^{4,5}, tum^{4}, eš^{3}, bi, kaz^{2,3}, ma^{1,2}, u^{2}, mu^{1}, im^{2}, ri^{2}.

I: **41**–**44**. Ruling of **41** hardly matches that in **40** anywhere; most decided joint in the inscription, though without projections. Style suggests B. Several new syllables or values; gul, kul, šun, zar, šîru, dur, dar, piš, dum, mur. Mu^{3,4} (the last new), ub^{2} (new), ma^{1}, u^{1}, im^{1}, ak^{1,2,4}, ru^{2,3}, šum^{1,2}, gan^{2}. Does not maintain last scribe's habit of carrying small verticals through the lower parallel, in ad, šum, etc. All verticals of ri, hu, ar, usually of equal height. Vertical bars of im, gi, zi, rather taller. Much leaning to right.